

WHAT IS CLAIMED IS:

1. A suture anchoring system, comprising:
a suture; and
at least three anchor members interconnected to form an anchor assembly with said
5 suture extending therefrom, said anchor assembly having an insertion configuration sized
for delivery through an aperture in bodily tissue and being transitionable to an expanded
configuration sized to prevent passage of said anchor assembly back through the aperture.
2. The system of claim 1, wherein said expanded configuration of said anchor
10 assembly comprises a triangular-shaped arrangement of said at least three anchor members.
3. The system of claim 1, wherein said expanded configuration of said anchor
assembly comprises a side-by-side arrangement of said at least three anchor members.
- 15 4. The system of claim 3, wherein said side-by-side arrangement of said at
least three anchor members comprises an alignment of said at least three anchor members
in a substantially parallel relationship relative to one another.
5. The system of claim 1, wherein said at least three anchor members are
20 aligned in a substantially linear arrangement to define said insertion configuration of said
anchor assembly, and wherein said at least three anchor members are transitioned to a non-
linear arrangement to define said expanded configuration of said anchor assembly.
6. The system of claim 1, wherein said at least three anchor members are
25 interconnected in series to form said anchor assembly.

7. The system of claim 1, wherein said at least three anchor members include first and second outer anchor members and at least one intermediate anchor member.

5 8. The system of claim 7, wherein said at least one intermediate anchor member is positioned transversely between said first and second outer anchor members to at least partially define said expanded configuration of said anchor assembly.

9. The system of claim 7, wherein said first and second outer anchor members
10 are drawn toward one another to at least partially define said expanded configuration of said anchor assembly.

10. The system of claim 9, wherein said expanded configuration of said anchor assembly comprises a triangular-shaped arrangement of said at least three anchor members
15 with said at least one intermediate anchor member extending transversely between said first and second outer anchor members.

11. The system of claim 10, wherein each of said first and second outer anchor members includes first and second end portions, said at least one intermediate anchor
20 member extending laterally between said first end portions of said outer anchor members, said second end portions of said outer anchor members being drawn toward one another to provide said triangular-shaped arrangement of said at least three anchor members

12. The system of claim 9, wherein said expanded configuration of said anchor
25 assembly comprises a side-by-side arrangement of said at least three anchor members with

said at least one intermediate anchor member positioned laterally between said first and second outer anchor members.

13. The system of claim 12, wherein said anchor assembly comprises two of
5 said intermediate anchor members positioned laterally between said first and second outer anchor members in a side-by-side relationship to define said expanded configuration of said anchor assembly.

14. The system of claim 12, further comprising:
10 a first actuating element extending through a first loop structure associated with said first outer anchor member and through a second loop structure associated with said second outer anchor member; and

a second actuating element secured to said anchor assembly adjacent said at least one intermediate anchor member; and

15 wherein said first and second outer anchor members are drawn toward one another by pulling said first actuating element in a direction away from said anchor assembly to at least partially transition said anchor assembly toward said expanded configuration; and

wherein said at least one intermediate anchor member is positioned laterally between said first and second outer anchor members by pulling said second actuating
20 element in a direction away from said anchor assembly to further transition said anchor assembly toward said expanded configuration

15. The system of claim 7, further comprising an actuating element extending through a first loop structure associated with said first outer anchor member and through a
25 second loop structure associated with said second outer anchor member; and

wherein said first and second outer anchor members are drawn toward one another by pulling said actuating element in a direction away from said anchor assembly to at least partially transition said anchor assembly toward said expanded configuration.

5 16. The system of claim 15, wherein each of said at least three anchor members has a tubular configuration defining an axial passage extending therethrough, said at least three anchor members being serially interconnected by a linking element extending through said axial passage in each of said at least three anchor members to form said anchor assembly, looped end portions of said linking element defining said first and second loop
10 structures associated with said first and second outer anchor members.

17. The system of claim 16, wherein each of said linking element and said actuating element comprises a suture.


15 18. The system of claim 7, wherein each of said at least three anchor members has a tubular configuration defining an axial passage extending therethrough, said at least three anchor members being serially interconnected by a linking element extending through said axial passage in each of said at least three anchor members to form said anchor assembly.

20

19. The system of claim 18, further comprising an actuating element extending through a first looped end portion of said linking element adjacent said first outer anchor member and through a second looped end portion of said linking element adjacent said second outer anchor member; and

25 wherein said first and second outer anchor members are drawn toward one another

by pulling said actuating element in a direction away from said anchor assembly to at least partially transition said anchor assembly toward said expanded configuration.

20. A suture anchoring system, comprising: 

5

a suture; and

at least three anchor members interconnected to form an anchor assembly with said suture extending therefrom, said anchor assembly having an insertion configuration wherein said anchor members are aligned in a substantially linear arrangement for delivery through an aperture in bodily tissue and an expanded configuration wherein said anchor members are transitioned to a non-linear arrangement to prevent passage of said anchor assembly back through the aperture.

10

21. The system of claim 20, wherein said expanded configuration of said anchor assembly comprises an arrangement selected from the group consisting of a triangular-shaped arrangement and a side-by-side arrangement of said at least three anchor members.

15

22. The system of claim 20, wherein said at least three anchor members include first and second outer anchor members and at least one intermediate anchor member; and wherein said outer anchor members are drawn toward one another to at least partially define said expanded configuration of said anchor assembly.

20

23. The system of claim 22, wherein said expanded configuration of said anchor assembly comprises a triangular-shaped arrangement of said at least three anchor members with said at least one intermediate anchor member extending transversely between said first and second outer anchor members.

25

24. The system of claim 22, wherein said expanded configuration of said anchor assembly comprises a side-by-side arrangement of said at least three anchor members with said at least one intermediate anchor member positioned laterally between said first and
5 second outer anchor members.

25. A suture anchoring system, comprising:
a suture; and
at least three anchor members interconnected to form an anchor assembly with said
10 suture extending therefrom, said anchor assembly including first and second outer anchor members and at least one intermediate anchor member, said anchor assembly having an insertion configuration wherein said anchor members are aligned in a substantially linear arrangement for delivery through an aperture in bodily tissue and an expanded
configuration wherein said first and second outer anchor members are drawn toward one
15 another to define a non-linear arrangement to prevent passage of said anchor assembly back through the aperture.


26. The system of claim 25, wherein said non-linear arrangement of said anchor assembly comprises a triangular-shaped arrangement with said at least one intermediate
20 anchor member extending transversely between said first and second outer anchor members.

27. The system of claim 25, wherein said non-linear arrangement of said anchor assembly comprises a side-by-side arrangement with said at least one intermediate anchor
25 member positioned laterally between said first and second outer anchor members.

28. The system of claim 25, further comprising an actuating element extending through a first loop structure associated with said first outer anchor member and through a second loop structure associated with said second outer anchor member; and

wherein said first and second outer anchor members are drawn toward one another
5 by pulling said actuating element in a direction away from said anchor assembly to at least partially transition said anchor assembly toward said expanded configuration.

29. The system of claim 28, wherein each of said at least three anchor members has a tubular configuration defining an axial passage extending therethrough, said at least
10 three anchor members being serially interconnected by a linking element extending through said axial passage in each of said at least three anchor members to form said anchor assembly, looped end portions of said linking element defining said first and second loop structures associated with said first and second outer anchor members.

15 30. A suture anchoring system, comprising: 

a suture;

at least three anchor members;

means for interconnecting said at least three anchor members to form an anchor assembly with said suture extending therefrom, said anchor assembly having an insertion
20 configuration wherein said at least three anchor members are aligned in a substantially linear arrangement for delivery through an aperture in bodily tissue; and


means for transitioning said anchor assembly from said insertion configuration to an expanded configuration wherein said at least three anchor members are transitioned to a non-linear arrangement to prevent passage of said anchor assembly back through the
25 aperture.

31. The system of claim 30, wherein said expanded configuration of said anchor assembly comprises a triangular-shaped arrangement of said at least three anchor members.

32. The system of claim 30, wherein said expanded configuration of said anchor
5 assembly comprises a side-by-side arrangement of said at least three anchor members.

33. The system of claim 30, wherein said at least three anchor members include first and second outer anchor members and at least one intermediate anchor member, said means for transitioning including means for drawing said outer anchor members toward
10 one another to at least partially define said expanded configuration of said anchor assembly.

34. The system of claim 33, wherein said means for transitioning includes means for drawing said at least one intermediate anchor member to a position between said
15 outer anchor members to further define said expanded configuration of said anchor assembly.

35. A suture anchoring system, comprising: 
a suture;
20 a plurality of anchor members interconnected to form an anchor assembly with said suture extending therefrom, said anchor assembly having an insertion configuration wherein said anchor members are aligned in a substantially linear arrangement for delivery through an aperture in bodily tissue and an expanded configuration wherein first and second ones of said anchor members are drawn toward one another to define a non-linear
25 arrangement to prevent passage of said anchor assembly back through the aperture; and

an actuating element extending through a first loop structure associated with said first anchor member and through a second loop structure associated with said second anchor member, wherein said first and second anchor members are drawn toward one another by pulling said actuating element in a direction away from said anchor assembly to at least partially transition said anchor assembly toward said expanded configuration.

36. The system of claim 35, wherein said plurality of anchor members includes at least one intermediate anchor member positioned between said first and second anchor members, said non-linear arrangement of said anchor assembly comprises a triangular-shaped configuration with said at least one intermediate anchor member extending transversely between said first and second anchor members.

37. The system of claim 35, wherein said plurality of anchor members includes at least one intermediate anchor member positioned between said first and second anchor members, said non-linear arrangement of said anchor assembly comprises a side-by-side configuration with said at least one intermediate anchor member positioned laterally between said first and second anchor members.

38. The system of claim 35, wherein each of said anchor members has a tubular configuration defining an axial passage extending therethrough, said anchor members being serially interconnected by a linking element extending through said axial passage in each of said anchor members to form said anchor assembly, looped end portions of said linking element defining said first and second loop structures associated with said first and second anchor members.

39. The system of claim 38, wherein each of said linking element and said actuating element comprises a suture.

40. A method for anchoring a suture to bodily tissue, comprising: —
5 providing at least three anchor members interconnected to form an anchor assembly with the suture extending from the anchor assembly;
aligning the at least three anchor members in a substantially linear configuration;
inserting the at least three anchor members through an aperture in the bodily tissue while in the linear configuration; and
10 transitioning the at least three anchor members from the linear configuration to a non-linear configuration to prevent passage of the anchor assembly back through the aperture.

41. The method of claim 40, wherein the transitioning comprises arranging the
15 at least three anchor members in a triangular relationship to define the expanded configuration.

42. The method of claim 40, wherein the transitioning comprises arranging the
at least three anchor members in a side-by-side relationship to define the expanded
20 configuration.

43. The method of claim 42, wherein the arranging comprises aligning the at least three anchor members in a substantially parallel relationship relative to one another.

44. The method of claim 40, wherein the at least three anchor members are interconnected in series to form the anchor assembly.

45. The method of claim 40, wherein the at least three anchor members include
5 first and second outer anchor members and at least one intermediate anchor member.

46. The method of claim 45, wherein the transitioning comprises arranging the
at least one intermediate anchor member to extend transversely between the first and
second outer anchor members.

10

47. The method of claim 45, wherein the transitioning comprises positioning the
first and second outer anchor members in a laterally opposite relationship.

48. The method of claim 45, wherein the transitioning comprises drawing the
15 first and second outer anchor members toward one another.

49. The method of claim 48, wherein the drawing of the first and second outer
anchor members toward one another comprises arranging the at least three anchor members
in a triangular relationship.

20

50. The method of claim 48, wherein the transitioning further comprises
positioning the at least one intermediate anchor member between the first and second outer
anchor members to arrange the anchor members in a side-by-side relationship.

25

51. The method of claim 50, wherein the anchor assembly comprises four of the anchor members and includes a pair of intermediate anchor members, the transitioning further comprising positioning the pair of intermediate anchor members between the first and second outer anchor members to arrange the anchor members in a side-by-side relationship.

52. The method of claim 48, further comprising providing a suture element extending through a first loop structure associated with the first outer anchor member and through a second loop structure associated with the second outer anchor member; and
10 wherein the drawing of the first and second outer anchor members toward one another results from pulling the suture element in a direction away from the anchor assembly.

53. The method of claim 40, further comprising:
15 providing a delivery instrument including an elongate tubular member defining an axial passageway;

loading the at least three anchor members within the axial passageway in the substantially linear configuration;
positioning a distal end portion of the tubular member adjacent the aperture in the
20 bodily tissue; and

wherein the inserting comprises deploying the at least three anchor members from the tubular member and through the aperture in the bodily tissue.

54. The method of claim 53, wherein the delivery instrument includes an inner
25 member positioned within the axial passageway of the tubular member; and

wherein the deploying comprises axially displacing the inner member through the tubular member and pushing the at least three anchor members out of the axial passageway and through the aperture in the bodily tissue.

- 5 55. The method of claim 40, further comprising forming the aperture in the bodily tissue prior to the inserting.